# AMAE-21 AUTOMOTIVE CHASSIS COMPONENTS DESIGN

**UNIT-1 VEHICLE FRAME AND SUSPENSION**

1.1 Study of loads-moments and stresses on frame members.
1.2 Design of frame for passenger and commercial vehicle
1.3 Design of leaf Springs-Coil springs and torsion bar springs.

**UNIT-2 FRONT AXLE AND STEERING SYSTEMS**

2.1 Analysis of loads
2.2 Moments and stresses at different sections of front axle.
2.3 Determination of bearing loads at Kingpin bearings.
2.4 Wheel spindle bearings.
2.5 Choice of Bearings.
2.6 Determination of optimum dimensions and proportions for steering linkages,
2.7 Ensuring minimum error in steering.
2.8 Design of front axle beam.

**UNIT-3 CLUTCH**

3.1 Design of single plate clutch,
3.2 Multiplate clutch and cone clutch.
3.3 Torque capacity of clutch.
3.4 Design of clutch components,
3.5 Design details of roller and sprag type of clutches.

**UNIT-4 GEAR BOX**

4.1 Gear train calculations,
4.2 Layout of gearboxes.
4.3 Calculation of bearing loads and selection of bearings.
4.4 Design of three speed and four speed gearboxes.

**UNIT-5 DRIVE LINE AND REAR AXLE**

5.1 Design of propeller shaft.
5.2 Design details of final drive gearing.
5.3 Design details of full floating,
5.4 Semi-floating and three quarter floating rear shafts and rear axle housings and design aspects of final drive.

**References Books:**


1. Heldt, P.M., "Automotive Chassis", Chilton Book Co., 1992.
2. Dean Averns, "Automobile Chassis Design", Illife Book Co., 2001.